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Nonlinear plane-symmetric perturbations of a spatial-plane Friedman universe filled with an ideal dust

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Abstract

The general solution of Einstein's equations with the energy-momentum tensor of an ideal dust in the plane-symmetric case is used to obtain the generalization of the solutions for scalar perturbations in a spatial-plane Friedman universe. It is shown that, in order for plane accumulations of matter with a density much greater than the mean density of the matter in the Universe to exist in the Universe at the present time, perturbations of the density are necessary at the time of recombination, (δe{open}/e{open})p {sine wave} 10-4. © 1988 Plenum Publishing Corporation.

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